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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR   | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|------------------------|---------------------|------------------|
| 09/893,314   | 06/27/2001  | Phillip B. Blankenship | KOCH.84166          | 2106             |
| 27910  | 7590        | 12/21/2004             | EXAMINER            |                  |
| STINSON MORRISON HECKER LLP.<br>ATTN: PATENT GROUP<br>1201 WALNUT STREET, SUITE 2800<br>KANSAS CITY, MO 64106-2150 |             |                        | FULLER, ERIC B      |                  |
|  |             |                        | ART UNIT            | PAPER NUMBER     |
|  |             |                        | 1762                |                  |

DATE MAILED: 12/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

09/893,314

BLANKENSHIP ET AL.

Examiner

Art Unit

Eric B Fuller

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 October 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 37-59 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 37-59 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

**DETAILED ACTION*****Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 37-47 and 49-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Helf (US 6,248,396 B1) in view of Walter (US 3,907,582) and Goodrich et al. (US 5,306,750).

Helf teaches a method of selecting an aggregate, selecting an asphalt, and selecting a polymer (column 2, lines 35-47), heating the asphalt to between about 150 and 200 degrees Celsius (column 7, lines 5-15), adding the polymer to the asphalt to form a binder, stirring the binder until said polymer is substantially dissolved, stirring the binder until a substantially homogeneous binder is formed, mixing the binder with the aggregate to form an interlayer (column 7, lines 55-57), and spreading the interlayer on the roadway. Helf additionally teaches the addition of cross-linking agents (column 5, line 65) and the high viscosity of the binder reads on low shear blending conditions. Helf additionally teaches the overlay (column 8, lines 55-63). As the mixture may be used as an interlayer or a may be the top layer, this reads on allowing traffic to drive on the interlayer.

Art Unit: 1762

The reference fails to teach performing stability and fatigue tests. However, Walter teaches that a Hveem stability test is used to determine the stability of an asphalt mixture so that it meets highway specifications and the results are effected by the amount of asphalt in the mixture (column 2, lines 44-60). Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to utilize a Hveem stability test. By doing so, one is able to ensure that highway specifications are met. It would have been within the skill of one practicing in the art, through routine experimentation, to determine the amount of asphalt that is needed in order to achieve the maximum stability. This reads on using the stability test to design the interlayer.

Additionally, Goodrich teaches that Flexural Beam Fatigue test is used to determine the fatigue life of an asphalt mixture and that the results are effected by the amount of polymer in the mixture (column 11, lines 60-65). Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to utilize a Flexural Beam Fatigue test. By doing so, one is able to ensure a long fatigue life of the product. It would have been within the skill of one practicing in the art, through routine experimentation, to determine the amount of polymer that is needed to achieve the maximum fatigue life. This reads on using a fatigue test to design the interlayer.

In consideration of Walter and Goodrich together, one of ordinary skill would recognize that the relative amount of asphalt in the mixture affects the stability of the product and that the relative amount of polymer in the mixture affects the fatigue life of

Art Unit: 1762

the product. Obviously, as the relative amount of asphalt is increased, the relative amount of polymer is decreased, causing a trade-off between flexibility and stability. It would have been within the skill of one practicing in the art, though routine experimentation, to determine the composition of the mixture such that desired stability and fatigue are achieved. The routine experimentation reads on the applicant's claims. By optimizing the stability and fatigue strength of the product, the final product would have the properties claimed in 38, 39, and 51.

As to claims 42-44, 53, and 54, Goodrich also teaches to determine the shear modulus, strain tolerance, bending creep, and rotational viscosity such that a good quality product is achieved (examples). Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to determine these attributes. By doing so, a good quality product is achieved.

As to claims 46, 47, and 49, Wilson teaches cooling between layers and forming an overcoat with a thickness of 1 inch (column 4-41). To use these values in the process taught by Helf would have been obvious at the time the invention was made to a person having ordinary skill in the art. By doing so, one would have a reasonable expectation of success, as both references pertain to coating roads with an overlay.

Claim 48 is rejected under 35 U.S.C. 103(a) as being unpatentable over Helf (US 6,248,396 B1) in view of Walter (US 3,907,582) and Goodrich et al. (US 5,306,750), as applied to claim 45 above, and further in view of McDonald (US 3,891,585).

Art Unit: 1762

The references mentioned above teach the limitations to claim 45, but fail to explicitly teach sweeping the roadway and sealing cracks prior to applying the interlayer. However, McDonald teaches to sweep the roadway and seal the cracks prior to forming an asphalt/polymer layer on it (column 9, lines 18-41). This is done so that underlying fatigue cracking is not reflected in the new layer (column 7, line 12).

Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to sweep and seal the cracks in the roadway of Helf. By doing so, the underlying fatigue cracks are not reflected in the new layer.

### ***Response to Arguments***

Applicant argues that since the fatigue and stability are inverse properties, one would not be motivated to optimize both properties. This is not found convincing. Properties being inversely proportional are often optimized together by engineers, such as pressure and volume in dealing with gases, cost efficiency and materials/energy used, etc. Optimization implies an inverse relationship, by maximizing a positive property (stability) while minimizing a negative property (loss of fatigue life) to achieve a desired result. If an inverse relationship did not exist, then there would be no reason to optimize a system, as the maximum would be sufficient. For the specific case, the prior art teaches a mixture having asphalt and polymer. The prior art teaches that as the relative amount of asphalt is increased, the stability is increased. Obviously, as the relative amount of asphalt is increased the relative amount of polymer is decreased. The prior art teaches that the fatigue is affected by the relative amount of polymer.

Art Unit: 1762

Thus, the prior art explicitly teaches which components affect what property of the mixture. This is an explicit teaching of result-effective variables in the mixture. The courts have determined that it is obvious to optimize result-effective variables. See *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Although the references may not individually teach to apply both tests, the references taken together make this limitation obvious. Walter explicitly teaches that too much asphalt would cause rutting. Using the Fatigue test taught by Goodrich would prevent one from using too much asphalt.

Applicant argues that one would not look to Goodrich, Walter, or McDonald. This argument is not found convincing. These references pertain to asphalt and polymer mixtures. This is relevant to the asphalt and polymer mixtures of the present invention and the primary reference.

Applicant argues that the references are silent to the teaching of the minimum stability and fatigue strength. This is not found convincing. By optimizing both parameters such that highway specifications are met, sufficient stability and fatigue strength would exist to read on the applicant's claims. Additionally, since Walter teaches that the amount of asphalt controls the Hveem Stability and Goodrich teaches that the amount of polymer controls the Flexural Beam Fatigue, a cause-effective relationship is established that would make the results obvious, and achievable thought routine experimentation.

All other argument are not found convincing because "flexible aggregate" reads on a polymer-modified asphalt composition. The polymer (rubber) adds flexibility to the aggregate (asphalt).

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

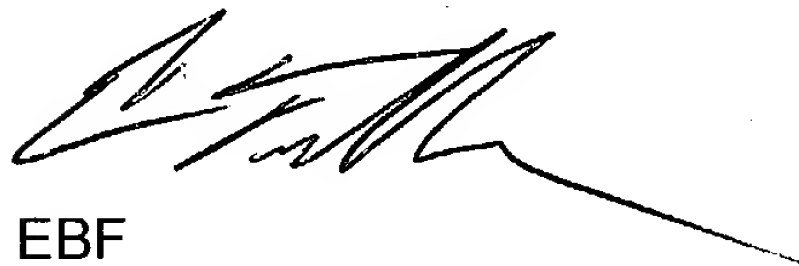
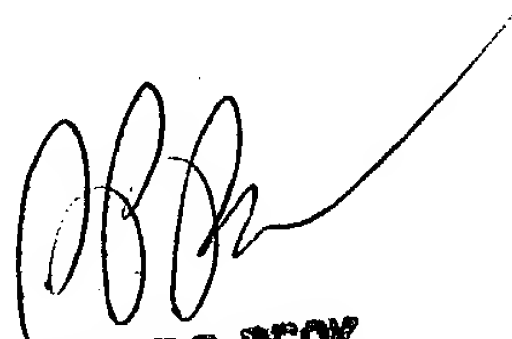
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric B Fuller whose telephone number is (571) 272-1420. The examiner can normally be reached on Mondays through Thursdays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P Beck, can be reached on (571) 272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.



Art Unit: 1762

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
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